

REMARKS

Claims 66-83 are currently pending in this. Claims 1-46 were canceled by previous amendments, and claims 47-65 have been cancelled by this amendment. In view of the foregoing amendments and remarks that follow, Applicants respectfully request favorable consideration and timely indication of allowance.

The Patent Office has objected to the drawings under 37 CFR 1.84(p)(4) because multiple reference characters have been used to designate the shaft in FIGS. 8 and 9. In response to this objection, the specification has been amended in a manner to clarify the drawings. Accordingly, Applicants respectfully request that this objection be withdrawn.

The Patent Office has further objected to the drawings under 37 CFR 1.84(p)(5) because the following reference characters are not mentioned in the specification: 18, 20, 24, 35, 37 and 54. In response, the Patent Office is directed to page 12, line 22 of the specification for a description of reference character 18, and to page 16, line 36 of the specification for a description of reference character 54. The drawings have been amended to delete the remaining reference characters specified in this objection. Applicants submit herewith proposed drawing corrections in accordance with MPEP § 608.02(v) along with a separate letter to the Official Draftsperson pursuant to MPEP § 608.02(r). Approval of the proposed drawing corrections is respectfully requested. Formal drawings incorporating the proposed corrections will be filed after a Notice of Allowance is received.

Claims 47-50, 54 and 56-60 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Margrain (US 3,805,104) in view of Umeki (US 3,209,187). Claims 51-53 have been rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Margrain in view of Umeki as applied to claim 50, and further in view of Karol (US 3,650,021). Claim 55 has been rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Margrain in view of Umeki as applied to claim 47, and further in view of Toshiba (JP 05328678A). Claims 61-63 have been rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Margrain in view of Umeki as applied to claim 47, and further in view of Kliman (US 5,793,138). Claims 64-65 have been rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Margrain in view of Umeki, and further in

view of Koechlin (US 3,562,569). Although Applicants traverse these rejections, they are moot in light of this amendment.

Applicants disclose a high efficiency coreless armature, which is neither taught nor suggested by the art of record. The coreless armature comprises a pair of concentric sheet metal windings separated by a continuous non-conductive fiber strand wrapped around the inner winding. Another continuous non-conductive fiber strand may be wrapped around the outer winding. The fiber may be wound onto the windings like thread on a spool to hold the armature together under the centrifugal force produced by high rotary speeds. The armature may be encapsulated in a material that impregnates the windings and the fibers.

According to the Patent Office, the combination of Margrain and Umeki teach an armature comprising a pair of encapsulated sheet metal windings. Relying on Karol, the Patent Office takes the position that it would have been obvious at the time the invention was made to use glass fiber wrapped around the outer surface of the inner windings for the purpose of supporting the encapsulated sheet metal winding. Even assuming, *arguendo*, that there is some suggestion or motivation in the art to combine the teachings of Margrain, Umeki and Karol, the resulting combination would not yield the claimed invention.

Karol discloses a conventional armature with etched traces on a printed circuit board. The printed circuit board is not discussed by Karol in detail, but it is well known in the art that a conventional printed circuit board is made from a fiberglass cloth impregnated with epoxy. The fiberglass cloth is woven from yarn that consists of multiple fiberglass strands. According to Karol, two printed circuit boards are positioned with their fiberglass surfaces back-to-back and formed into a cylindrical shape on a mandrel. The mandrel and the cards are then placed in a shell, which has a lower temperature coefficient than the mandrel. The assembly is subjected to an elevated temperature and cooled. Because of the differential temperature coefficients between the mandrel and the shell, the mandrel expands at a faster rate than the shell under elevated temperatures, and as a result, forces the cards together to form a bond.

In rotary applications, the centrifugal force will tend to pull the printed circuit board of Karol apart. This force will be applied to the fiberglass cloth, but it will be also

applied to the epoxy bond holding the cards together. When a force is applied to a material, it will break at the weakest link, which will be the epoxy bond in the case of Karol. As a result, Karol's printed circuit armature is limited to low speed motors because it cannot withstand the centrifugal force produced under high speed conditions. This is quite different from Applicants' load-bearing structure that uses a continuous fiberglass strand wrap around the entire armature a number of times.

Claim 66, the only independent claim remaining in this case, recites:

a pair of concentric inner and outer sheet metal winding portions separated by a continuous non-conductive fiber strand extending around the circumference of the inner winding portion a plurality of times....

(emphasis added). None of the references cited by the Patent office, either alone or in combination, disclose or suggest this limitation. Karol teaches a cylindrical printed circuit board with a pure epoxy bond that extends axially along the circumference of the armature. This epoxy bond forms an interrupt in the fiberglass cloth, and as a result, there is not a single strand of fiber that extends continuously around the armature a number of times as expressly required by claim 66. Accordingly, Applicants respectfully submit that claim 66 is patentable over the art of record.

Claim 67 is dependent from claim 66, and therefore, incorporates by reference all the limitations therein. Claim 67 also recites "a second continuous non-conductive fiber strand extending around the circumference of the outer winding portion a plurality of times...." (emphasis added). None of the references cited by the Patent Office teach or suggest using a fiber composite of any kind around the outside winding. Accordingly, Applicants submit that claim 67 is also patentable over the art of record.

Claims 68-83 are also dependent from claim 66 and incorporate by reference all the limitations of claim 66. Accordingly, these claims are also patentable by virtue of their dependency on claim 66, as well the additional limitations recited therein. Applicants see no point in addressing these additional limitations at this time in view of the current record.

In view of the foregoing amendments and remarks, it is respectfully submitted that this application is now in condition for allowance. Accordingly, reconsideration and

allowance are respectfully requested. Should any issues remain which the Examiner believes could be resolved in a telephone interview, the Examiner is requested to telephone Applicants' undersigned attorney.

Respectfully submitted,

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